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General Practitioner Fundholding and Prescribing Expenditure Control

Evidence from a Rural English Health Authority

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Summary

In April 1991, the fundholding and indicative prescribing schemes introduced budgets for expenditure on prescribed drugs into UK general practice. Although both schemes were designed to be equally effective at containing prescribing-cost inflation, several studies suggest that expenditure growth has been lower in fundholding practices, compared with nonfundholding practices. This study attempts to ascertain how fundholding practices control their expenditure by examining data from a rural English health authority for the financial year 1993 to 1994.

The fundholding practices sampled were found to control their expenditure through: (i) reduced overprescribing; (ii) using fewer drugs that have limited clinical value; (iii) substituting similar, but less expensive, drugs; (iv) more generic prescribing; and (v) appropriate use of expensive preparations.

However, whether the cost differential between fundholding and nonfundholding practices is sustained in future years will depend upon: (i) the ability of fundholding practices to generate further savings; (ii) the characteristics of the practices that enter the fundholding scheme in subsequent waves; (iii) the way in which the scheme is organised; and (iv) the level at which budgets are set.

Between 1980 and 1991, annual spending on prescribed drugs in the UK rose from 1.1 billion to 3.3 billion pounds sterling (£), representing a real *per capita* increase of approximately 60%.[1] The UK government's concern over prescribing-cost inflation was indicated in the White Paper *Working for Patients*,[2] which prefaced the National Health Service (NHS) reforms that were implemented in April 1991: 'Expenditure on medicines has grown on average by 4% a year above the rate of inflation over the last 5 years' and the cost of the drugs was 'more than the cost of the doctors who wrote the prescriptions' (p. 57).[2] During this period, attempts were made to control prescribing-cost growth by means of a series of national and local initiatives, for example, the introduction of the 'Limited List',[3] and the promotion of generic substitution.[4] While such initiatives attempted to reduce the cost of individual prescriptions, they were not designed to put a ceiling on annual NHS expenditure on drugs.

Before the NHS reforms, prescribing in general practice (which accounted for nearly 80% of NHS spending on drugs) was not cash-limited.[5] In order to introduce financial control into this area of NHS expenditure, 2 separate budgetary regimes were introduced in April 1991. First, as part of the general practice fundholding scheme, practices may hold their own, cash-limited budgets for the purchase of some hospital and community services,

salaries of nonmedical staff, and prescribing.[6] Fundholding practices receive a management allowance to help cover the costs of operating the scheme and are permitted to generate budget savings, which may be spent on improving practice services. Practices that fail to manage their budgets appropriately are ejected from the scheme, which entails the loss of the benefits that membership confers.

Second, since April 1991, nonfundholding practices have been assigned Indicative Prescribing Amounts (IPAs), notional budgets within which practices are expected to keep their annual prescribing expenditure.[7] To encourage nonfundholding practices to control their prescribing costs, incentive schemes are operated by many Family Health Services Authorities (FHSAs).[8] However, the returns that such schemes offer are relatively small, compared with benefits that fundholding practices may derive. Although the UK government hoped that IPAs would contain costs as effectively as the prescribing budgets that are assigned to fundholding practices, several studies have suggested that the latter spend relatively less on drugs per patient than the former group.[9-13] However, few studies have examined exactly how fundholding practices manage to achieve their lower costs, other than by an examination of generic prescribing rates.

In 1994, the UK Audit Commission published the results of a study of prescribing in 54 general practices, located in 10 FHSAs, which concluded that, if all general practitioners (GPs) followed its recommendations, NHS expenditure on drugs could be reduced by £425 million.[14] This could be achieved by:

- increased generic prescribing
- substitution of similar, but cheaper, drugs
- appropriate use of expensive preparations
- fewer prescriptions for drugs of limited clinical value
- reduced use of drugs that are often over-prescribed.

To accompany its report, the Audit Commission made available to all FHSAs what it termed the 'Thematic Analysis of Prescribing' (ACTAP) data set, which contained information on the savings that individual practices could generate through the use of such strategies. The aim of this study, therefore, was to use the ACTAP data to examine the means by which fundholding practices control their expenditure on prescribed drugs.

Methods

To help examine patterns of expenditure in fundholding general practices, ACTAP and Prescribing Analysis and CosT (PACT) data were collected for practices in one English health authority, *Lincolnshire Health*. PACT data were obtained from the Prescription Prescribing Authority, a national body which records details of all prescriptions filled (e.g. name of drug, amount prescribed, name of authorising GP) and can provide information on national and local prescribing trends. Lincolnshire is a rural county of East England, with approximately 550 000 inhabitants. During the financial year 1993 to 1994, the county had 108 general practices within its boundaries, although complete data were available for only 100. For the purposes of analysis, the practices were divided into 2 groups: first, the 19 practices that joined the fundholding scheme during the first 3 waves and were, consequently, fundholders in the financial year 1993 to 1994; and second, the 81 remaining, nonfundholding, practices.

Patient and practice data were also collected to test for differences in demographic or organisational characteristics between the 2 groups, which may have influenced their prescribing expenditures. With regard to demographic characteristics, the Jarman score (which provides an index of deprivation for an area using weighted elements such as overcrowding, socio-economic class distribution and number of single parents), unemployment rate and permanent sickness have been suggested as proxies for need and deprivation in general practice.[19-21] The proportion of patients aged 65 years and over, temporary residents, night visits and prescription charge exemption certificates have been found to increase prescribing costs at a practice level in Lincolnshire.[22] As far as practice organisational characteristics are concerned, dispensing

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Table I. Mean patient and organisational characteristics of fundholding and nonfundholding general practices in Lincolnshire, England, in the financial year 1993 to 1994

Characteristic	Fundholders	Nonfundholders	p-Value
Patient			
Jarman score	−2.37	−1.88	0.824
Unemployment rate	7.53%	8.36%	0.333
Proportion of list defined as permanently sick	3.35%	3.81%	0.121
Proportion of list aged 65 years and over	18.09%	19.42%	0.082
List inflation owing to temporary residents	8.81%	6.64%	0.511
Night visits per 1000 patients per year	34.53	33.98	0.830
Proportion of list bearing exemption certificates	3.49%	3.63%	0.523
Organisational			
Patient list	10 689	4716	<0.001
Number of GPs	5.47	2.53	<0.001
Patient list per GP	1 961.42	1917.91	0.592
Training practices	47.37%	20.99%	0.019
Dispensing practices	42.11%	59.26%	0.177
Possession of a practice formulary	47.37%	48.15%	0.950
Receiving PACT Level III data (most detailed level)	57.89%	35.80%	0.078
Using computer for repeat prescribing	100.00%	83.95%	0.063

Abbreviations: GP = general practitioner; PACT = Prescribing Analysis and CosT.

status does not indicate the proportion of patients that such practices may dispense drugs to, which may range from 1 patient to 100% of a practice's list, depending on the proportion that live in a rural setting. Unfortunately, it was not possible to collect data on the proportion of patients to whom drugs were dispensed in this study.

In the ACTAP and PACT data sets, spending on prescribing is measured in Net Ingredient Cost (NIC), which is the expenditure by the NHS on prescribed drugs, excluding dispensing fees and any discounts offered. In keeping with the latest NHS guidance,[15] practice expenditures are standardised in terms of NIC per 1000 Age Sex Temporary Resident Originated Prescribing Units (i.e. NIC per 1000 ASTRO-PUs). The ASTRO-PU attempts to account for the differences in drug usage that have been found to exist between different demographic groups by giving individual weightings to each of the groups mentioned in its title.[16] Analysis was also performed at a *British National Formulary* (BNF)[17] chapter level, using Specific Therapeutic-group Age-sex Related Prescribing Units (STAR-PUs), which attempt to account for the age- and sex-related differences in prescribing costs that have been found to exist at this level.[18]

Exploratory statistical analysis was performed on the data collected, in order to test for differences in demography, practice organisation and prescribing expenditures between fundholding and nonfundholding practices. The Student's t-test was employed to test for between-group differences in continuous variables and the Mann-Whitney test was employed for binary variables. Analysis was performed using the SPSS statistics package (SPSS Inc, Chicago, IL, USA), with statistical significance being reported at the 95% level or above ($p < 0.05$).

Results

Demographic and Practice Organisational Data

As table I shows, during the financial year 1993 to 1994, no statistical differences were evident in demographic characteristics between fundholding and nonfundholding practices.

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Table II. Prescribing budgets and expenditures (pounds sterling; £) in fundholding and nonfundholding practices in Lincolnshire, England in the financial year 1993 to 1994

Prescribing budgets and expenditures	Fundholders	Nonfundholders	p-Value
Aggregate prescribing data:			
budget per 1000 ASTRO-PUs	15 821.22	18 591.37	<0.001
NIC per 1000 ASTRO-PUs	15 984.42	19 533.40	<0.001
budget overspend	1.19%	5.35%	0.099
Audit Commission prescribing categories (expenditure per 1000 ASTRO-PUs)			
(a) Hospital and anaesthesia[a]	746.60	682.22	0.407
(b) Immunological products[b]	346.50	318.98	0.327
(c) Dressings, appliances, etc.[c]	1258.89	1254.81	0.959
(d) Certain drugs also available over the counter	1680.23	2061.28	0.002
subtotal [categories (a) to (d)]	4032.22	4317.28	0.166
(e) Core prescribing[d]	11 952.20	15 216.11	<0.001
Selected *British National Formulary* chapters (expenditure per 1000 STAR-PUs)			
(1) Gastrointestinal system	1127.81	1354.84	0.008
(2) Cardiovascular system	978.45	1197.65	0.002
(3) Respiratory system	1530.82	1855.25	0.048
(4) Central nervous system	1083.43	1360.90	<0.001
(5) Infections	1379.38	1637.49	0.079
(6) Endocrine system	1328.69	1424.44	0.299
(10) Musculoskeletal and joint disease	1370.02	1655.29	0.015
(13) Skin	1130.62	1291.78	0.044

a Specialist drugs prescribed to practice patients by a hospital consultant and the use of anaesthetics.

b Drugs used for immunisation.

c Use of dressings and appliances, as well as items used in wound management and other preparations (including those used in diagnosis and borderline substances).

d Expenditure in each of the categories (a) to (d) subtracted from NIC per 1000 ASTRO-PUs.

Abbreviations: ASTRO-PU = Age Sex Temporary Resident Originated Prescribing Unit; NIC = Net Ingredient Cost; STAR-PU = Specific Therapeutic-group Age-sex Related Prescribing Unit.

The organisational characteristics of fundholding and nonfundholding practices were also examined (table I). Fundholders' practices were larger in terms of average patient list size ($p < 0.001$) and number of GPs ($p < 0.001$), but no difference in the average number of patients per GP was found. A significantly higher proportion of fundholding practices provided training to vocational registrars; however, a similar proportion of fundholding and nonfundholding practices had dispensing status (practices with permission to dispense drugs to patients living in rural areas, at some distance from a pharmacy).[23] On average, no statistical difference was found in the percentage of fundholding and nonfundholding practices that possessed a formulary, requested the most detailed level of the PACT prescribing report (level III), or used a computer for repeat prescribing (table I).

Prescribing Budgets and Expenditures

During the financial year 1993 to 1994 fundholding practices were, on average, set prescribing budgets that were 14.9% lower than their nonfundholding counterparts ($p < 0.001$), resulting in an 18.17% difference in NIC per ASTRO-PU between the 2 groups ($p < 0.001$) [table II]. However, this difference was not explained by a difference in the average budget overspend of either group. In a subanalysis, no statistical difference between mean values for the 2 groups was evident in expenditure in the following 3 categories: specialist drugs prescribed to practice patients by a hospital consultant and the use of anaesthetics [category (a)]; drugs used for immunisation [category (b)]; the use of dressings and appliances, as well as items used in wound management and other preparations

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(including those used in diagnosis) [category (c)]. Fundholders did, however, spend significantly less ($p = 0.002$) on certain drugs identified by the Audit Commission as also being available over the counter [category (d)].

When expenditure in categories (a) to (d) was totalled, there was no significant difference between the amount spent by fundholding and nonfundholding practices (table II). This is because the slightly higher (although not statistically significant) expenditure in the categories (a) to (c) partly cancelled out the savings made in category (d). Expenditure in each of these 4 prescribing areas was deducted from total NIC per ASTRO-PU to derive what the Audit Commission terms 'expenditure on core prescribing' [category (e)]. Fundholders spent a mean of 22.53% less ($p < 0.001$) on core prescribing than nonfundholding practices, which accounts for 95.34% of the difference in average NIC per ASTRO-PU between the groups.

Finally, on average, fundholding practices spent relatively less per STAR-PU on drugs in the following BNF chapters: gastrointestinal ($p = 0.008$), cardiovascular system ($p = 0.002$), respiratory system ($p = 0.048$), central nervous system ($p < 0.001$), musculoskeletal and joint disease ($p = 0.015$) and skin ($p = 0.044$). However, no significant difference was identified in the BNF chapters for infections and the endocrine system (table II).

Effects of Expenditure-Control Strategies

Table III shows that, on average, fundholding practices prescribed 16.41% fewer items per ASTRO-PU ($p < 0.001$) and 23.43% more items generically ($p = 0.028$). These results suggest that fundholding practices were able to reduce costs by controlling the volume of drugs they prescribed and by using less expensive, generic substitutes. However, it must be stressed that, in aggregate, the item is an unsuitable measure of prescribing volume if there are differences in the quantity and strength of drugs that constitutes the average item in the fundholding and nonfundholding groups.[28] Therefore, a more suitable means of measuring prescribing volume would be preferable; consequently, the results presented here should be taken as exploratory and are included to allow comparisons with other studies.

The potential savings that practices could have realised through the use of the expenditure-control strategies identified by the Audit Commission are also presented in table III. On average, compared with nonfundholding practices, there fundholding practices had less potential to achieve savings through the use of the following strategies: increased prescribing of the top 20 generic drugs ($p = 0.024$); substitution of similar, but less expensive drugs ($p < 0.001$); appropriate use of expensive preparations ($p = 0.024$); and the prescribing

Table III. Expenditure-control strategies used by fundholding and nonfundholding practices in Lincolnshire, England in the financial year 1993 to 1994

Expenditure-control strategy	Fundholders	Nonfundholders	p-Value
Prescribing volume and generic substitution:			
items per 1000 ASTRO-PUs (number)	2243.88	2684.32	<0.001
proportion of items prescribed generically (%)	43.30	35.08	0.028
Potential savings [pounds sterling (£) per 1000 ASTRO-PUs] from:			
increased prescribing of top 20 generic drugs	336.44	533.04	0.024
substitution of similar but less expensive drugs	77.86	162.95	<0.001
reduced use of premium-priced drugs	276.70	380.91	0.024
reduced use of drugs that have limited clinical value	199.41	371.13	0.001
subtotal (aforementioned potential savings)	890.41	1448.03	<0.001
prescribing fewer drugs that are often overprescribed	1646.67	2690.99	<0.001
less double-counting (drugs that appear in more than one group)	−132.43	−252.85	0.003
total	2404.66	3886.17	<0.001

Abbreviation: ASTRO-PU = Age Sex Temporary Resident Originated Prescribing Unit.

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of fewer drugs of limited clinical value ($p = 0.001$). Criteria which were used to determine or define, for example, drugs of limited clinical value, were those outlined in the Audit Commission report.

When the potential savings that each of these strategies could have yielded were totalled, fundholding practices were found to have had, on average, significantly fewer savings available to them than nonfundholding practices ($p < 0.001$). At the mean, fundholding practices also had fewer potential savings available to them through prescribing fewer overprescribed drugs ($p < 0.001$). After allowing for the savings that were made by drugs that appear in more than one group (that is, double-counting), the data suggest that the potential savings available to fundholding practices were, on average, 38.12% lower than those of nonfundholding practices ($p < 0.001$). The correct interpretation of this result is that fundholders had fewer potential savings available to them as they were already using these expenditure-control strategies to help, in part, achieve a lower level of spending on prescribing.

Discussion

The exploratory statistical analysis presented in this study supports the finding of other studies in this area[9-13] that, at the mean, fundholding practices spend less than nonfundholding practices on prescribing per patient or Prescribing Unit. In this study, expenditure was measured in terms of NIC per ASTRO-PU. Previous studies, on the other hand, have examined NIC per patient,[13] NIC per Prescribing Unit,[9,10] or were based on the Defined Daily Dose methodology.[11,12] Given that FHSAs were advised to base budget allocations on ASTRO-PUs from the fiscal year 1994 to 1995 onwards,[15] the analysis presented in this paper is in keeping with current NHS practice. The present results also support those of previous work, which found that fundholding practices prescribe a lower volume of drugs per patient,[9,11,12] and prescribe more items generically.[10-12]

The results presented in table I suggest that any differences in prescribing expenditures between the fundholding and nonfundholding practices in this sample are not likely to result from differences in the demography of the 2 groups. These findings also suggest that the fundholders sampled were large, well-organised practices, which probably results from 2 of the scheme's entry criteria at the time: (i) a minimum list-size of 7000 patients; and (ii) sufficient organisational ability.[24] Moreover, any differences in prescribing expenditures are unlikely to result from a greater use of practice formularies, prescribing information or computers for repeat prescribing (which can be used to manage expenditure).[25-27] However, the data for these variables has been collected from practice annual reports for the fiscal year 1993 to 1994; as these data are self-reported, their accuracy cannot be judged and the results must be treated as exploratory.

Thus, the main finding of this paper is that the fundholding practices that were sampled made greater use of the expenditure-control strategies identified by the Audit Commission to achieve lower average costs. As table III shows, the Audit Commission calculated that during the financial year 1993 to 1994, both fundholding and nonfundholding practices could have reduced their expenditure through the use of such strategies.

The differential use of expenditure-control strategies by the 2 groups suggests that: (i) the fundholding scheme embodies a set of incentives and constraints that can alter a practice's prescribing behaviour; (ii) the characteristics of the practices that became fundholders during the first 3 waves influenced their prescribing expenditures; or (iii) a combination of both. If the first is true, attaining fundholding status will affect the prescribing behaviour of the practices that become fundholders in later waves.[29] Consequently, if they enter the scheme, nonfundholding practices will realise the savings that the ACTAP data identified as being available to them. If the second possibility holds, only large, well-organised practices will achieve such savings, regardless of fundholding status. If the third option is correct, only certain practices will respond to the incentives and constraints

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embodied in the fundholding scheme. Therefore, as more practices enter the scheme, differences between fundholding practices in the level of savings realised will emerge.

In May 1996, the Audit Commission published a report on the performance of the practices that became fundholders during the first 5 years of the scheme's operation.[30] Based on a national study of such practices, the Commission found that earlier fundholding waves tended to consist of large, well-organised practices, similar to the fundholders sampled in this study. The report concluded that the performance of early-wave fundholders was superior to that of the more diverse group of practices that entered the scheme in later years. The present study, therefore, supports the assertion that only certain types of practices will respond to the incentives and constraints embodied in the fundholding scheme. Consequently, it is unlikely that, in its current form, the scheme will improve the performance of all practices that attain fundholding status.

As a means of addressing this problem, the Audit Commission recommended that FHSAs should identify the 'leading-edge' fundholders in their area and 'use their experience and skill to help GPs who are new to the scheme or underachieving' (p. 96).[30] A previous study of general practices in Lincolnshire found that fourth-wave fundholders (who entered the scheme in April 1994) were different, in terms of organisation and performance, from the practices that entered the scheme in previous waves.[31] The Audit Commission's study,[30] therefore, suggests that later-wave fundholders may need guidance if they are to realise levels of savings similar to those achieved by the large, well-organised fundholding practices sampled here.

The results presented in table II suggest that fundholding practices were better able to control expenditure in some prescribing-cost categories than others, particularly within the area the Audit Commission has termed 'core prescribing'. Within this category, practices have relatively greater control over expenditure compared with the other prescribing categories, as only doctors within the practice are involved in the prescribing decision and the drugs prescribed are not an adjunct to another form of provision (such as minor surgery). Moreover, fundholding practices spent less per STAR-PU on drugs listed in the following BNF chapters: gastrointestinal, cardiovascular system, respiratory system, central nervous system, musculoskeletal and joint disease, and skin. These results suggest that savings are relatively easier to achieve within some prescribing categories and chapters than others. In addition, the fundholding practices sampled prescribed fewer of the drugs that the Audit Commission identified as also being available over the counter. By doing so, fundholders were able to reduce their budget expenditure and shift the cost of the drugs to the patient, who may buy them directly from a pharmacist, rather than obtaining them on prescription.

Another cause of the differences in prescribing expenditures between fundholding and nonfundholding practices may be the strategic behaviour of the nonfundholding practices that are considering joining the fundholding scheme. In principle, such practices may artificially inflate their prescribing costs before applying for fundholding status, as a means of obtaining a larger budget allocation (and, consequently, the opportunity to derive a greater budget surplus) once in the scheme. Despite the plausibility of such an argument, little evidence has been found to support this hypothesis.[32] Alternatively, potential fundholders may resist prescribing-cost savings in order to guarantee budget surpluses once they have entered the scheme. Indeed, nonfundholding practices have little incentive to reduce their expenditure on prescribing as the main benefits from doing so accrue to the governing FHSA. The fundholding scheme may, therefore, create a perverse incentive that encourages nonfundholding practices to delay potential savings into the future.

As this study only examined cross-sectional data for the financial year 1993 to 1994, it has not been possible to follow the path of prescribing expenditures in fundholding and nonfundholding practices over time. A previous study of practices

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in Lincolnshire found that, on average, fundholders had a lower NIC growth rate during the 3 financial years prior to this study.[33] However, the data presented here suggest that funding practices have a limited ability to control expenditure further, as they cannot indefinitely: (i) reduce the volume of drugs they prescribe; (ii) increase their generic prescribing rate; or (iii) make savings from the use of expenditure-control strategies. Moreover, the Audit Commission study found that many of the prescribing-cost savings achieved by fundholding practices are 'one-off' in nature, and usually occur in the first year of membership of the scheme.[30] These findings suggest that after initial savings have been made, fundholding practices will find it harder to contain the growth in their prescribing expenditure. Indeed, according to recent evidence, fundholders' ability to curb prescribing costs may diminish in the longer term.[34,35]

In conclusion, this study found that the fundholding scheme has encouraged or allowed the large, well-organised fundholding practices that were sampled to make relatively more use of various expenditure-control strategies, as a means of reducing their prescribing costs. However, whether the cost differential between fundholding and nonfundholding practices is sustained in future years will depend on: (i) the ability of fundholding practices to generate further savings; (ii) the characteristics of the practices that enter the fundholding scheme in subsequent waves; (iii) the way in which the scheme is organised; (iv) the level at which budgets are set.

However, the limitations of this study must be stated. First, during the financial year 1993 to 1994, Lincolnshire had the highest average NIC per patient of all the English FHSAs.[36] Therefore, it is unlikely that practices in other areas could realise savings of the same magnitude as those in the current sample. Second, there is some evidence that the ASTRO-PU does not account for all of the determinants of NIC variation.[37] Nevertheless, to date, there is little evidence to suggest that the measure is systematically biased in favour of fundholding practices. Finally, the Audit Commission's report on prescribing[30] was subject to criticism over its focus on expenditure[38] and, from the ACTAP data-set, it is not possible to ascertain the effects that the use of prescribing-control strategies has had on patients' welfare.

Economic Implications

As this study focused on expenditure, it is not possible to consider the full economic implications (that is, the costs and benefits) of its results. Nevertheless, it is possible to estimate the financial implications of its findings.

If the fundholding practices in this sample had realised all of the savings available to them (through the use of the strategies identified by the Audit Commission) their expenditure would have been reduced by 15.04% per ASTRO-PU compared with that which was actually achieved. If the nonfundholding practices had realised all potential savings their expenditure would have been reduced by 19.90% compared with that which was actually achieved. However, as the results of this study suggest, whether these savings are realised will depend on how the fundholding and indicative prescribing schemes are operated and on the characteristics of the practices in each budgeting regime.

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